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Monday, August 8, 2005

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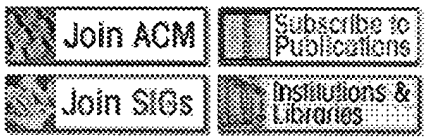

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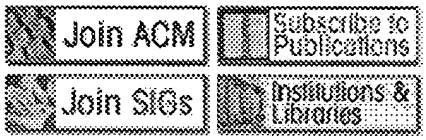

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1 Real world applications: A pareto archive evolutionary strategy based radial basis function neural network training algorithm for failure rate prediction in overhead feeders
Grant Cochenour, Jerad Simon, Sanjoy Das, Anil Pahwa, Surasish Nag
June 2005 **Proceedings of the 2005 conference on Genetic and evolutionary computation GECCO '05**
Full text available: pdf(369.75 KB) Additional Information: full citation, abstract, references, index terms

This paper outlines a radial basis function neural network approach to predict the failures in overhead distribution lines of power delivery systems. The RBF networks are trained using historical data. The network sizes and errors are simultaneously minimized using the Pareto Archive Evolutionary Strategy algorithm. Mutation of the network is carried out by invoking an orthogonal least square procedure. The performance of the proposed method was compared to a fuzzy inference approach and with mu ...

Keywords: multi-objective optimization, neural networks, pareto archive evolutionary strategy, power system reliability, radial basis function

2 Predicting acid concentrations in processing plant effluent: an application of time series prediction using neural networks
Antonette M. Logar, Edward M. Corwin, William J. B. Oldham
March 1992 **Proceedings of the 1992 ACM/SIGAPP symposium on Applied computing: technological challenges of the 1990's**
Full text available: pdf(678.48 KB) Additional Information: full citation, references, index terms

3 The development of a methodology for the use of neural networks and simulation modeling in system design
Mahdi Nasereddin, Mansooreh Mollaghasemi
December 1999 **Proceedings of the 31st conference on Winter simulation: Simulation---a bridge to the future - Volume 1**
Full text available: pdf(63.14 KB) Additional Information: full citation, references, index terms

4 Special issue on the MAMA 2002 workshop: Automatic and portable performance modeling for parallel I/O: a machine-learning approach

Shengke Yu, Marianne Winslett, Jonghyun Lee, Xiaosong Ma
December 2002 **ACM SIGMETRICS Performance Evaluation Review**, Volume 30 Issue 3

Full text available: pdf(390.76 KB) Additional Information: full citation, abstract, references

A performance model for a parallel I/O system is essential for detailed performance analyses, automatic performance optimization of I/O request handling, and potential performance bottleneck identification. Yet how to build a portable performance model for parallel I/O system is an open problem. In this paper, we present a machine-learning approach to automatic performance modeling for parallel I/O systems. Our approach is based on the use of a platform-independent performance metamodel, which i ...

5 Learning classifier systems and other genetics-based machine learning: Modeling systems with internal state using evolino

Daan Wierstra, Faustino J. Gomez, Jürgen Schmidhuber
June 2005 **Proceedings of the 2005 conference on Genetic and evolutionary computation GECCO '05**

Full text available: pdf(323.88 KB) Additional Information: full citation, abstract, references, index terms

Existing Recurrent Neural Networks (RNNs) are limited in their ability to model dynamical systems with nonlinearities and hidden internal states. Here we use our general framework for sequence learning, EVOlution of recurrent systems with LINear Outputs (Evolino), to discover good RNN hidden node weights through evolution, while using linear regression to compute an optimal linear mapping from hidden state to output. Using the Long Short-Term Memory RNN Architecture, Evolino outperforms previous ...

Keywords: evolution and learning, recurrent neural networks, time-series prediction

6 Radial basis function networks in A+

Alexander Skomorokhov
June 2002 **ACM SIGAPL APL Quote Quad , Proceedings of the 2002 conference on APL: array processing languages: lore, problems, and applications**, Volume 32 Issue 4

Full text available: pdf(242.73 KB) Additional Information: full citation, abstract, references

This paper discusses an implementation and application of Radial Basis Function (RBF) Networks. This type of neural networks performs a universal approach to function approximation. The same algorithm and program may be successfully applied to regression modeling or pattern classification. We illustrate the most important characteristics of RBF networks with a number of examples and discuss network behavior in depth. The software has been implemented in the A+ language, which became available to ...

7 Keynotes: Computational intelligence as an emerging paradigm of software engineering

Witold Pedrycz
July 2002 **Proceedings of the 14th international conference on Software engineering and knowledge engineering SEKE '02**

Full text available: pdf(124.06 KB) Additional Information: full citation, abstract, references, index terms

Software Engineering is inherently knowledge intensive. Software processes and products are human centered. The technology of Computational Intelligence (CI) intensively exploits various mechanisms of interaction with humans and processes domain knowledge with intent of building intelligent systems. As commonly perceived, CI dwells on three highly synergistic technologies of neural networks, fuzzy sets (or granular computing, in general) and evolutionary optimization. As the software complexity ...

Keywords: computational intelligence, data visualization, genetic optimization, granular computing, neural networks, software quality, synergy, uncertainty representation

8 Modeling methodology a: Optimization and response surfaces: Gaussian radial basis functions for simulation metamodeling
Miyoung Shin, Robert G. Sargent, Amrit L. Goel
December 2002 **Proceedings of the 34th conference on Winter simulation: exploring new frontiers**
Full text available: pdf(361.18 KB) Additional Information: full citation, abstract, references

This paper presents a novel approach for developing simulation metamodels using Gaussian radial basis functions. This approach is based on some recently developed mathematical results for radial basis functions. It is systematic, explicitly controls the underfitting and overfitting tradeoff, and uses a fast computational algorithm that requires minimal human involvement. This approach is illustrated by developing metamodels for the M/M/1 queueing system.

9 On the implementation of RBF technique in neural networks
M. T. Musavi, K. B. Faris, K. H. Chan, W. Ahmed
May 1991 **Proceedings of the conference on Analysis of neural network applications**
Full text available: pdf(513.17 KB) Additional Information: full citation, references, citings, index terms

10 Identifying prospective customers
Paul B. Chou, Edna Grossman, Dimitrios Gunopulos, Pasumarti Kamesam
August 2000 **Proceedings of the sixth ACM SIGKDD international conference on Knowledge discovery and data mining**
Full text available: pdf(170.89 KB) Additional Information: full citation, references, citings, index terms

Keywords: customer prospecting

11 Technical session 1: content-based image retrieval: Learning an image manifold for retrieval
Xiaofei He, Wei-Ying Ma, Hong-Jiang Zhang
October 2004 **Proceedings of the 12th annual ACM international conference on Multimedia**
Full text available: pdf(143.52 KB) Additional Information: full citation, abstract, references, index terms

We consider the problem of learning a mapping function from low-level feature space to high-level semantic space. Under the assumption that the data lie on a submanifold embedded in a high dimensional Euclidean space, we propose a relevance feedback scheme which is naturally conducted only on the image manifold in question rather than the total ambient space. While images are typically represented by feature vectors in Rn, the natural distance is often different from the distance induced by t ...

Keywords: dimensionality reduction, image retrieval, manifold learning, riemannian structure, semantic space

12 Performance bounds for nonlinear time series prediction
Ron Meir

July 1997 **Proceedings of the tenth annual conference on Computational learning theory**

Full text available: pdf(1.36 MB) Additional Information: full citation, references, citings, index terms

13 A novel method for protein subcellular localization based on boosting and probabilistic neural network

Jian Guo, Yuanlie Lin, Zhirong Sun

January 2004 **Proceedings of the second conference on Asia-Pacific bioinformatics - Volume 29 CRPIT '04**

Full text available: pdf(106.36 KB) Additional Information: full citation, abstract, references

Subcellular localization is a key functional characteristic of proteins. An automatic, reliable and efficient prediction system for protein subcellular localization is needed for large-scale genome analysis. In this paper, we introduce a novel subcellular prediction method combining boosting algorithm with probabilistic neural network algorithm. This new approach provided superior prediction performance compared with existing methods. The total prediction accuracy on Reinhardt and Hubbard's data ...

Keywords: amino acid composition, boosting, probabilistic neural network, subcellular localization

14 Exploring data mining implementation

Karim K. Hirji

July 2001 **Communications of the ACM**, Volume 44 Issue 7

Full text available: pdf(101.20 KB) html(40.65 KB) Additional Information: full citation, references, citings, index terms, review

15 Real world applications: Interactive estimation of agent-based financial markets models: modularity and learning

Ihsan Ecemis, Eric Bonabeau, Trent Ashburn

June 2005 **Proceedings of the 2005 conference on Genetic and evolutionary computation GECCO '05**

Full text available: pdf(435.60 KB) Additional Information: full citation, abstract, references, index terms

Building upon the interactive inversion method introduced by Ashburn and Bonabeau (2004), we show how to dramatically improve the results by exploiting modularity and by letting the computer learn user preferences.

Keywords: agent-based modeling, interactive evolution

16 Special issue on special feature: Ranking a random feature for variable and feature selection

Hervé Stoppiglia, Gérard Dreyfus, Rémi Dubois, Yacine Oussar

March 2003 **The Journal of Machine Learning Research**, Volume 3

Full text available: pdf(103.01 KB) Additional Information: full citation, abstract, citings, index terms

We describe a feature selection method that can be applied directly to models that are linear with respect to their parameters, and indirectly to others. It is independent of the target machine. It is closely related to classical statistical hypothesis tests, but it is more intuitive, hence more suitable for use by engineers who are not statistics experts.

Furthermore, some assumptions of classical tests are relaxed. The method has been used successfully in a number of applications that are brie ...

17 Bioinformatics: Weave amino acid sequences for protein secondary structure prediction

Xiaochun Yang, Bin Wang

June 2003 **Proceedings of the 8th ACM SIGMOD workshop on Research issues in data mining and knowledge discovery**

Full text available: pdf(160.75 KB) Additional Information: full citation, abstract, references, index terms

Given a known protein sequence, predicting its secondary structure can help understand its three-dimensional (tertiary) structure, i.e., the folding. In this paper, we present an approach for predicting protein secondary structures. Different from the existing prediction methods, our approach proposes an encoding schema that weaves physio-chemical information in encoded vectors and a prediction framework that combines the context information with secondary structure segments. We employed Support ...

Keywords: SVM, encoding schema, protein secondary structure, protein structure prediction

18 Learning evaluation functions to improve optimization by local search

Justin Boyan, Andrew W. Moore

September 2001 **The Journal of Machine Learning Research**, Volume 1

Full text available: pdf(643.21 KB) Additional Information: full citation, abstract, citings

This paper describes algorithms that learn to improve search performance on large-scale optimization tasks. The main algorithm, STAGE, works by learning an evaluation function that predicts the outcome of a local search algorithm, such as hillclimbing or Walksat, from features of states visited during search. The learned evaluation function is then used to bias future search trajectories toward better optima on the same problem. Another algorithm, X-STAGE, transfers previously learned evaluation ...

19 Industrial/government track: Frequent-subsequence-based prediction of outer membrane proteins

Rong She, Fei Chen, Ke Wang, Martin Ester, Jennifer L. Gardy, Fiona S. L. Brinkman

August 2003 **Proceedings of the ninth ACM SIGKDD international conference on Knowledge discovery and data mining**

Full text available: pdf(166.07 KB) Additional Information: full citation, abstract, references, index terms

A number of medically important disease-causing bacteria (collectively called Gram-negative bacteria) are noted for the extra "outer" membrane that surrounds their cell. Proteins resident in this membrane (outer membrane proteins, or OMPs) are of primary research interest for antibiotic and vaccine drug design as they are on the surface of the bacteria and so are the most accessible targets to develop new drugs against. With the development of genome sequencing technology and bioinformatics, bio ...

Keywords: association rule, classification, outer membrane protein, subcellular localization, support vector machine

20 A training algorithm for optimal margin classifiers

Bernhard E. Boser, Isabelle M. Guyon, Vladimir N. Vapnik

July 1992 **Proceedings of the fifth annual workshop on Computational learning theory**

Full text available: pdf(1.00 MB) Additional Information: full citation, abstract, references, citings, index terms

A training algorithm that maximizes the margin between the training patterns and the decision boundary is presented. The technique is applicable to a wide variety of the classification functions, including Perceptrons, polynomials, and Radial Basis Functions. The effective number of parameters is adjusted automatically to match the complexity of the problem. The solution is expressed as a linear combination of supporting patterns. These are the subset of training patterns that are closest t ...

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Witold Pedrycz
July 2002 **Proceedings of the 14th international conference on Software engineering and knowledge engineering SEKE '02**
Full text available: pdf(124.06 KB) Additional Information: full citation, abstract, references, index terms

Software Engineering is inherently knowledge intensive. Software processes and products are human centered. The technology of Computational Intelligence (CI) intensively exploits various mechanisms of interaction with humans and processes domain knowledge with intent of building intelligent systems. As commonly perceived, CI dwells on three highly synergistic technologies of neural networks, fuzzy sets (or granular computing, in general) and evolutionary optimization. As the software complexity ...

Keywords: computational intelligence, data visualization, genetic optimization, granular computing, neural networks, software quality, synergy, uncertainty representation

2 Session 5: novel interaction: MAUI: a multimodal affective user interface
Christine L. Lisetti, Fatma Nasoz
December 2002 **Proceedings of the tenth ACM international conference on Multimedia**
Full text available: pdf(377.18 KB) Additional Information: full citation, abstract, references, citings

Human intelligence is being increasingly redefined to include the all-encompassing effect of emotions upon what used to be considered 'pure reason'. With the recent progress of research in computer vision, speech/prosody recognition, and bio-feedback, real-time recognition of affect will enhance human-computer interaction considerably, as well as assist further progress in the development of new emotion theories.In this article, we describe how affect, moods and emotions closely interact with co ...

Keywords: affect recognition, emotions, intelligent interfaces, interface agent

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